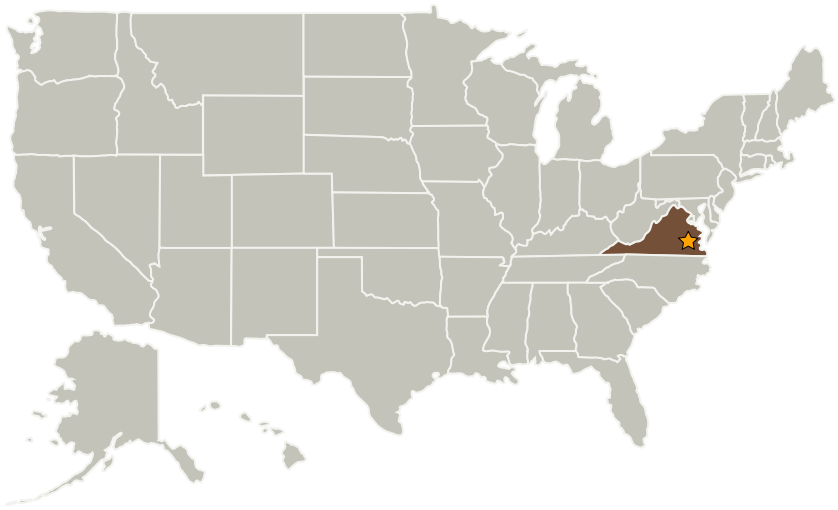
Single Frequency Lasers for Space-Based Wind and Aerosol Lidar, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

This SBIR will develop single frequency cw laser technology for 2um lidar and UV interferometer locking control critical to NASA missions that will measure atmospheric winds and aerosols. NASA recently completed the Earth Science Decadal Study that identified atmospheric global wind and aerosol measurement as high priority missions with recommended satellite deployments within the next decade. Our general approach to this SBIR is to perform proof of concept research that results in optical designs that can be readily integrated into existing flight ready hardware. After Phase 2 we anticipate the technology will readily transfer to NASA mission use. We expect successful completion of the proposed work to increase the TRL from 4 to 5. The innovation of this SBIR is the development of space-qualifiable CW single-frequency lasers at 2 μm and 355 nm, products that are not commercially available. Numerous pulsed 355 nm sources are available for commercial applications but they are not space-qualifiable. There are several scientific investigations of 355 nm CW lasers described in the literature but no effort has been made to create high vibration aircraft nor space qualified products available to NASA.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Metis Technology Solutions, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Albuquerque, New Mexico

Primary U.S. Work Locations
Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Floyd Hovis

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers